

That which is claimed is:

1. In an improved earth boring drill bit having a body with at least one leg depending therefrom, a bearing pin secured to the leg, a cone rotatably mounted to the bearing pin, the cone having a gage surface, the improvement comprising:

a scraper mounted on the leg and protruding into close proximity with the gage surface to clean debris from the gage surface.

2. The apparatus of claim 1, wherein the scraper comprises an insert having a base portion press-fitted into a hole in the inside surface of the leg.

3. The apparatus of claim 2, wherein the insert is made from a carbide material.

4. The apparatus of claim 1, wherein the scraper has a surface that is substantially parallel to a portion of the gage surface when viewed in cross-section.

5. The apparatus of claim 1, wherein a distance from an axis of the bearing pin to the scraper is greater than a distance from the axis of the bearing pin to an inner edge of the gage surface.

6. The apparatus of claim 1, wherein the scraper is chisel shaped, having a pair of flanks converging to a crest.

7. The apparatus of claim 6, wherein the crest is substantially tangent to a circle surrounding the bearing pin axis.

8. An apparatus for boring earth, comprising:

a body having at least one leg with a bearing pin depending therefrom;

a cone mounted to the bearing pin for rotating about an axis of the bearing pin, the cone having an outer cutting surface and a conical gage surface joining the outer cutting surface, and a backface joining the gage surface, the backface being in a plane perpendicular to the axis of the bearing pin;

a plurality of cutting elements protruding from the outer cutting surface; and

a gage scraper press-fitted into a hole in an inside surface of the leg and protruding from the leg toward the gage surface to clean debris from the gage surface, the gage scraper being radially farther from the axis of the bearing pin than a radial distance from the axis of the bearing pin to a junction of the backface with the gage surface.

9. The apparatus of claim 8, wherein the scraper has a surface that is generally parallel with a portion of the gage surface.

10. The apparatus of claim 8, wherein the scraper has a tip that protrudes past the backface, relative to the axis of the bearing pin.

11. The apparatus of claim 8, wherein the scraper has an axis that is substantially parallel to an axis of the bearing pin.

12. The apparatus of claim 8, further comprising a backface scraper mounted to the leg closer to the bearing pin axis than the gage scraper in order to clean the backface.

13. The apparatus of claim 8, wherein the scraper is chisel shaped.

14. The apparatus of claim 8, wherein the scraper has two flanks and a crest.

15. The apparatus of claim 14, wherein the crest is generally perpendicular to a radial line of the bearing pin.

16. An apparatus for boring earth, comprising:

a body having at least one leg, the leg having a bearing pin with a bearing pin axis;

a cone having a cavity that rotatably fits on the bearing pin;

an annular flat backface on the cone surrounding the cavity and perpendicular to an axis of the cone, the backface being parallel to a last machined surface formed on an inside surface of the leg;

a conical gage surface extending from the backface to an outer cutting surface of the cone;

a backface scraper mounted to the last machined surface and protruding into close proximity with the backface; and

a gage scraper protruding from an inside surface of the leg past the backface and overlying a portion of the gage surface to clean debris from the gage surface, the gage scraper being radially farther from the bearing pin axis than a junction of the backface and gage surface to the bearing pin axis, the scraper being chisel shaped.

17. The apparatus of claim 16, wherein the gage scraper has two flanks converging to a crest, and wherein one of the flanks is substantially parallel to a portion of the gage surface.

18. The apparatus of claim 16, wherein the gage scraper has two flanks converging to a crest, the crest being perpendicular to a radial line of the bearing pin axis.

19. The apparatus of claim 16, wherein the gage scraper is located radially past the last machined surface.

20. The apparatus of claim 16, wherein the gage scraper has an axis that is parallel to the bearing pin axis.